REMARKS

Applicants thank the Examiner and his Supervisor for the courtesy of a telephone conference on November 28, 2006. Both Examiner and his Supervisor indicated that the claims as they stand may be allowable pending elaboration of Applicants' arguments.

Claim Rejections - 35 U.S.C. § 103

Claims 1-17, 19-20, 23-26, 34-44, 46 and 47 have been rejected under 35 U.S.C. 103(a) as anticipated by Schultz [US 6,256,5221 in view of Krauth [US 4,954,4351, and further in view of Vo-Dinh [US 5,864,397] and further in view of Menaker [US 5,464,438].

Claim 1, as previously amended, claims a device for detecting the presence of an analyte in a sample. The claim requires a core comprising of a binding substrate with an analyte binding site, an analogue that binds in the binding site and which has a label with a first emission wavelength, a quenching dye, a reference having emission wavelength different from label, and an *analyte permeable membrane transparent to light of the wavelengths* used to excite label and reference, *wherein the device is seamless* and the binding substrate has molecular imprint of the analyte. None of the references either alone or in combination teach such a seamless sensor device having a permeable membrane transparent to light. The remaining claims all depend from Claim 1.

The ability to construct seamless devices has many advantages, such as increased resistance to rupture due to mechanical stress, reduced risk of an immunological response, reduced irritation and inflammation post implantation, and ease of in vivo delivery.

Although Schultz illustrates the use of an implantable sensor capsule for measuring the concentration of certain bioanalytes in a patient, there is no mention of the sensor capsule being seamless in its construction. In fact, Schultz indicates that the sensor capsule may have two or more components joined mechanically by screwed joints with O-rings, or preferably sealed by adhesion or heat. Alternatively, the sensor capsule may be composed of a small hollow

cylindrical device having one integral end. The other end could be sealed via a suitable membrane held in place via a retainer ring.

Two of the other two references cited by the Examiner (Krauth et al., and Vo-Dinh et al.), disclose the use of multi-component external devices that can be used to detect concentration of an analyte.

One of ordinary skills in the art would not have any incentive to combine the teachings of Schultz (an implantable device) with that of Krauth and Vo-Dinh (an externally placed device). Even if such references were to be combined, they still would not teach a seamless device for detecting the presence of an analyte.

In addition, Claim 1 as currently presented, requires that the binding substrate have a molecular imprint of the analyte of interest. As the examiner correctly points out, Schultz teaches a binding substrate encompassed within a sensor capsule, but fails to teach that the binding substrate has a molecular imprint of the analyte.

As discussed in Applicants' June 27, 2006 response, Krauth teaches detection of an analyte through an enzyme immunoassay by indirect colorimetric detection. An incident light beam at a plurality of wavelengths is directed into a solution of the analyte. The solution is capable of attenuating, by absorption, the amount of light at the first wavelength scattered from said incident beam, as a function of increasing analyte concentration. A light signal from the solution at the first wavelength is detected, and light at a second wavelength spectrally removed from the first, and which is not substantially attenuated by increasing concentration of analyte is also detected. A ratio of signal intensity at the two wavelengths is calculated and compared with ratios of signal intensities obtained from samples having known concentration of said analyte, to determine the concentration of analyte in the sample.

Furthermore, and as discussed previously, Vo-Dinh teaches an external probe that includes a member made of optically transmissive material for detecting analyte via Surface-Enhanced

Raman Scattering Spectroscopy when placed in contact with it. The end of the member is made of a microparticulate first layer overlaid with a metal layer for enhancing the Raman signals. An optional layer having a molecular imprint of the analyte of interest may be applied to the metal layer to concentrate analyte of interest.

Unlike the invention of Claim 1, neither Vo-Dinh nor Krauth contain an analyte permeable membrane encapsulating the core sensor elements and reference. Consequently, none of Schultz, Vo-Dinh, or Krauth either alone or in combination set forth all the limitations of claim 1, namely a device which is seamless and encapsulates the core sensor elements and reference and which is transparent to certain wavelengths of light.

The Examiner then asserts that Menaker et al remedies these deficiencies by teaching "a seamless device (column 6, lines 24-27) and further teach[ing] that by eliminating seams along the outer surface, the reduction of the availability of sites for the generation of thromboses. Since the device of Schultz would come into contact with the bloodstream (columns 10, lines 38-40), one would have been motivated to reduce the possibility of any complications caused by the implant such as the occurrence of thromboses."

The Examiner's assertion is incorrect. Menaker et al. teaches:

> "implantable grafts, shunts, patches, heart valves or other devices to be incorporated as part of the vascular system of a living body consistent with the foregoing teachings of the prior art and providing finished implants with *a coating of gold*. The coating is applied to the surfaces of the implant intended to come into contact with the patient's blood stream thereby providing a lining or coating which is chemically inert and which has been observed and predicted to inhibit the formation of thromboses and possible infection." (Col. 6, lines 2-12), (emphasis added).

Menaker et al. further states that, in the context of vascular grafts, "[w]here material is drawn, as over a mandrel , *to form such a seamless tube* , it is expected that the vapor deposition or

sputtering techniques will induce the gold to adhere tightly to the inner and outer walls of the implant. (Col. 6 lines 20-27) (emphasis added).

Claim 1 as currently written requires that the device of the invention include "(c) an analyte-permeable membrane that *encapsulates components (a) and (b)* and that is *transparent to light* of the wavelengths that excite the label and the reference." (emphasis added). This limitation in claim 1 effectively requires that the invention be *a seamless capsule transparent* to certain wavelengths of light.

First, it is clear from the disclosure of Menaker that what is taught is not a seamless capsule, but simply a tube (i.e., a device having *two hollow ends),* to be used as part of a vascular graft. Menaker et al nowhere teaches a method for sealing the tube let alone sealing the tube in a way so as to form as *seamless capsule* as set forth in Claim 1.

Second, the entire purpose behind Menaker is to teach the coating of implantable medical devices with *gold*, in order to prevent thromboses and infection. If one were to combine Menaker with any of the previously cited references the result would be a seamed medical device coated in gold -- rendering the device no longer *transparent to light.* Consequently, rather than teaching a seamless capsule, as stated by the Examiner, the Menaker reference effectively *teaches away* from the claimed transparent seamless capsule of the invention.

For all of the reasons cited above, it is clear that none of the references suggest or disclose the device of this invention. Furthermore, there is no motivation to combine these references, and that even if combined, they do not disclose or suggest the device of the present invention. Claim 1 is therefore patentable over the prior art.

Claims 2-47 depend from or otherwise incorporate all the limitations of Claim 1. As such they are patentable for at least the same reasons as Claim 1.

Conclusion

In view of the foregoing remarks, it is respectfully submitted that the application is in condition for allowance and Applicants earnestly solicit early examination on the merits and issuance of a Notice of Allowance. Should the examiner believe that any additional information or amendment is necessary to place the application in condition for allowance, he is urged to contact the undersigned Attorney via telephone at 617-439-2746, or facsimile number 617-310-9746.

The Commissioner is hereby authorized to charge any required fees due in connection with this submission, including petition and extension of time fees, and to credit any overpayment to Deposit Account No. 141449 (Docket No. 106570-0002) (Lifescan Inc.).

Respectfully submitted,

Date: February 9, 2007

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